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Oracle WebLogic 12.2.1.x Configuration Guide

Oracle Utilities Application Framework

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INTRODUCTION

With the introduction of native support for Oracle WebLogic and the domain features in Oracle WebLogic 12.2.1.x it is possible to reuse these standard features in Oracle Utilities Application Framework products to maximize flexibility and reduce deployment costs.

This white paper provides guidelines for installation and configuration of Oracle Utilities Application Framework application server components when using WebLogic 12.2.1.x.

Note: This whitepaper is an addendum to the Installation Guide supplied with the product.

PREREQUISITES

Before attempting to install the Oracle Utilities Application Framework based product in Oracle WebLogic 12.2.1.x, read and thoroughly understand all the below documented required steps:

- If you have any questions or anything is unclear regarding Oracle WebLogic and Oracle Utilities Application Framework installation/configuration please contact Oracle support.

***Note:** If you previously created your domain with an Oracle Utilities Application Framework based product provided domain creation template and/or followed the Native Installation (Doc Id: 1544969.1) white paper to create your domain the recommendation is to create a new domain from scratch following the below.*

- For additional notes for a non-SSL configuration please see section *Additional Notes if SSL is Disabled in your Domain*.
- For a Windows Server installation, for use with the Oracle Utilities SDK, it is recommended to deploy directly to the `AdminServer` rather than having a separate managed server. In this configuration for Step 2 below, **WebLogic SSL Port Number** and **WebLogic Console Port Number** parameters should have the same value, **WebLogic Server Name** should be set to `AdminServer` and IWS deployment target should be set to `AdminServer`.
- For an Oracle WebLogic cluster configuration it is critical that the Oracle Utilities Application Framework application secret key keystore is identical across all `SPLEBASE` node installations. See the *Security Guide* distributed with your product for more details. Additionally the Oracle Utilities Application Framework Configuration parameters **for Business Server Host** (menu block 2) and **Web Server Host** (menu block 3) should be set to a value of `localhost`. When configuring multiple WebLogic managed servers in WebLogic they should all have the same SSL and/or non-SSL port numbers.

DOMAIN CREATION PROCESS

***Note:** The domain creation steps outlined in this section are assuming the default embedded LDAP security is used. Additional steps may be necessary post installation to setup alternative security repositories. Refer to the Fusion Middleware Administering Security for additional advice.*

The first step is to create the domain to house the product with specific settings:

Domain Creation Steps

STEP	PROCESS
1	Create your WebLogic domain and at least one managed server or, optionally, a WebLogic cluster: • Oracle Fusion Middleware Infrastructure Installer 12.2.1.x is required. For instructions on using the Fusion Middleware Infrastructure Installer, refer to the *Installing and Configuring the Oracle Fusion Middleware Infrastructure*. • To support an Oracle Utilities Application Framework based application the domain needs (at minimum) both the **Basic WebLogic Server Domain** template and the **Oracle Restricted JRF** template applied. • Additionally the **WebLogic JRF Server Groups** should be applied to your managed server(s) • It is recommend that you obtain and install a trusted certificate from a Certificate Authority for WebLogic SSL encryption as the Oracle WebLogic provided self-signed demo certificate may not be adequate especially on a non-development system. For additional information on configuring keystores in Oracle WebLogic see the *Configuring Keystores* section of the *Oracle Fusion Middleware Administering Security*.
2	Use the `configureEnv` utility to align the Oracle Utilities Application Framework to the new domain setup (using the `configureEnv[.sh|.cmd] -g` option) with the following setting : • **WebLogic SSL Port Number** (menu block 3) is recommended to be set to the *SSL Listen Port* you configured when creating the managed server(s) in step 1. • **WebLogic Console Port Number** (menu block 3) is recommended to be set to the *SSL Listen Port* you configured when creating the administration server in step 1. • **WebLogic Admin System User ID** (menu block 3) is recommended to be set to the **administrator account** you configured when creating the domain in step 1. • **WebLogic Admin System Password** (menu block 3) is recommended to be set to the administrator password you configured when creating the domain in step 1. • **WebLogic Server Name** (menu block 3) is recommended to be set to the managed server (if a cluster the managed server corresponding to the node you are configuring) you configured when creating the domain in step 1. • **Deploy Using Archive Files** (menu block 3) is recommended to be set to `true`. • **Set Super User Ids** (menu block 3) is recommended to be set to the value used for administration (e.g. `SYSUSER`) • **IWS deployment target** (menu block 50) is recommended to be set to the managed server (or cluster) you configured when creating the domain in step 1 • **Web Admin Server Host** (menu block 50) is recommended to be set to the fully qualified host name where the Admin Server was configured from step 1 • **Domain Home Location** (menu block 52) should be set to the full path to the domain
3	Copy the `<SPLEBASE>/tools/examples/bin/setUserOverrides[.sh|.cmd]` into the bin directory of your Domain Home Location.

	If a trusted CA certificate was installed as recommend in step 1 it is recommended to set `TRUST_TYPE` appropriately (e.g. `DEMO` for demonstration certificates) in your environment to ensure it is set correctly for Oracle WebLogic administration commands.
4	Create `cisusers` (or the value of **Web Security Role** from menu block 52) group in the Oracle WebLogic embedded LDAP
5	Create `SYSUSER` (or the value of **Super User Id**) user (Oracle Utilities Application Framework application admin user) in the WebLogic embedded LDAP. Ensure `SYSUSER` (or the value of **Super User Id**) a member of `cisusers` group (or custom group created in step 4)
6	To allow non-administration access, create that non-administration (e.g. `ouafjndi`) user using the Oracle WebLogic console or Fusion Middleware control and make that user a member of the `cisusers` group (or custom group created in step 4). For more information about non-administration access to the JNDI, refer to *Securing Your JNDI resources for Other Groups*.
7	Use step 6 values to correctly populate **WebLogic JNDI User ID** (menu block 3) and **WebLogic JNDI Password** (menu block 3) using the `configureEnv` utility.
8	To avoid deployment timeouts, it is recommended to set the *Timeout Seconds* using the Oracle WebLogic console Services → JTA to `600`.
9	When using the embedded LDAP is recommended to use the `Master First` setting to reduce security overheads using the Oracle WebLogic console Domain → Security → Embedded LDAP screen. It is recommended to restart the `AdminServer` after all changes to ensure all changes have been committed successfully.

10	The domain is ready for the deployment of the `SPLService`, `SPLWeb` and `ohelp` Oracle Utilities Application Framework web applications.
	• Run `initialSetup[.sh|.cmd]` utility prior to deploying the OUAF product ear files to incorporate the above changes and build the deployment files.
	• Deploy `<SPLEBASE>/splapp/applications/SPLService.ear` using the Oracle WebLogic console using the following guidelines:
	  ◦ Install this deployment as an application
	  ◦ Target to the relevant server (or cluster) created in step 1
	  ◦ Name the deployment `SPLService` by default.
	  ◦ It is recommended to set the **Security model** to `Advanced`
	  ◦ It is recommended to set the **Deployment Order** to `100` to force this component to load first to establish database connections.
	• Deploy `<SPLEBASE>/splapp/applications/SPLWeb.ear` using the Oracle WebLogic console using the following guidelines:
	  ◦ Install this deployment as an application
	  ◦ Target to the relevant server (or cluster) created in step 1
	  ◦ Name the deployment `SPLWeb` by default
	  ◦ It is recommended to set the **Security model** to `Advanced`
	  ◦ It is recommended to set the **Deployment Order** to `200` to ensure this application is started after the `SPLService` application to establish connections between the applications.

	• Deploy `<SPLEBASE>/splapp/applications/ohelp.ear` using the Oracle WebLogic console using the following guidelines:
	  ◦ Install this deployment as an application
	  ◦ Target to the relevant server (or cluster) created in step 1
	  ◦ Name the deployment `ohelp` by default
	  ◦ It is recommended to set the **Security model** to `Advanced`
	  ◦ It is recommended to set the **Deployment Order** to `100` as this application does not have direct server connections to `SPLWeb` or `SPLService`. It does need to be available by the time the `SPLWeb` is started to provide maximized access to online help for online users.
	This step should be repeated if any of the above EAR files are rebuilt using the `initialSetup` utility.

11	If you will be using Oracle Utilities Application Framework Inbound Web Services functionality it is recommend to use `iwsdeploy[.sh|.cmd]` utility to deploy `Webservices.ear`. Detailed instructions for setting up Inbound Web Services are detailed in *Web Services Configuration*.
12	If the Global Cache Flush functionality is to be used on this domain, additional steps are required to configure this facility are documented in *Global Flush Support Configuration*.
13	It is recommended to restart the domain using the Oracle WebLogic command line utilities to verify the domain operates natively before any additional administration activities are performed including using the *Oracle WebLogic Domain Builder* to build a template for the domain.

WEB SERVICES CONFIGURATION

In the Oracle Utilities Application Framework the Inbound Web Services capability uses the Oracle WebLogic JAX-WS implementation to provide industry standard SOAP integration.

Web Service Prerequisites

Before attempting to deploy the Inbound Web Services deployment a number of prerequisites are recommended:

- This section assumes that the domain has been created and is configured using the process outlined in the previous section. The Inbound Web Services deployment relies on the libraries included in the domain and the domain setup.

- This section assumes that if the Oracle WebLogic Domain and the Oracle Utilities Application Framework application are configured for SSL that a signed certificate from a certificate authority certificate or self-signed certificate are configured and operating.

- If deploying to an Oracle WebLogic cluster ensure that iwsdeploy.sh is only run on the primary node, where the `AdminServer` is running, and that the Oracle Utilities Application Framework keystore is identical across all nodes.

- If inline annotations are used with individual Inbound Web Services, ensure they are valid and available in the locations documented in the *Server Administration Guide* shipped with the product prior to the deployment. Any errors in the definition or the inclusion of invalid annotations could result in the failure of the Inbound Web Services deployment to build and deploy.

- Ensure that the `USER_LOCK` procedure is installed and active on the product database. This is used to ensure the deployment process is serialized for conflict minimization purposes. This can be tested by executing the following SQL statement against the database using the product schema owner account:

  ```
  exec user_lock.sleep(100);
  ```

  If this statement returns an error then the `USER_LOCK` must be enabled.

- If the menu option exists for your Framework version, ensure that the **Enable the Web Services Functionality** (menu block 50) is set to `true` to enable the functionality using the `configureEnv` (via the `-g` option) utility.

Web Service Deployment Steps

To build and deploy the Inbound Web Services within the product domain the following steps apply:

Web Service Deployment Steps

STEP	PROCESS
1	The following Oracle Utilities Application Framework settings should be confirmed and • **IWS deployment target** (menu block 50) is recommended to be set to the server (or cluster) to which the Webservices EAR will be deployed • **Web Admin Server Host** (menu block 50) is recommended to be set to the WebLogic admin server host • **This is a development environment** (menu block 52) is recommended to be set to *true* to allow Webservice deployment from the browser user interface. In Production it is recommended to set this to `false` and use the `iwsdeploy` utility exclusively.
2	Create an Oracle WebLogic user configuration file (as `<SPLEBASE>/etc/.wlsuserconfig`) and an associated key file (as `<SPLEBASE>/etc/.wlsuserkey`). Refer to your Oracle WebLogic product documentation on the `storeUserConfig` WLST command for additional details. If the product is running an Oracle WebLogic cluster it is only necessary to perform this step in the `SPLEBASE` on the same node as the domain `AdminServer`.
3	Ensure that `AdminServer` and `Webservice` target managed server(s) is running.
4	Run `initialSetup[.sh|.cmd] -i` to import the WebLogic server certificate into the Oracle Utilities Application Framework trust key store. Repeat as needed with additional `host:port` combinations using `initialSetup[.sh|.cmd] -i host:port` to import certificates of application servers that will be called from the Oracle Utilities Application Framework application components. It is recommended that the target `host:port` will need to be *available* for the certificate import to complete successfully.
5	Use the `iwsdeploy[.sh|.cmd]` to deploy the Webservice EAR file. Alternatively the Oracle WebLogic console deployment capabilities can be used. If the latter is used ensure the following parameters are used on the deployment: • Install this deployment as an application • Target to the relevant server (or cluster) created in step 1 • Name the deployment `Webservices` by default • It is recommended to set the **Security model** to `Advanced` • It is recommended to set the **Deployment Order** to `100`

Additional Notes if SSL is Disabled in your Domain

It is recommended to always use SSL and encrypted communication with your web application server. If you are not using SSL it is still possible to configure `Webservices` with the caveat that any service using WS-Policy configurations that require SSL will be unusable.

Additional configuration processes when SSL is disabled on your Oracle Utilities Application Framework application server as follows:

Non-SSL Configuration Steps

STEP	PROCESS
1	Configure the following on Oracle Utilities Application Framework configuration using the `configureEnv` utility, using the `configureEnv[.sh|.cmd] -g` command: • It is recommended to set the **WebLogic SSL Port Number** (menu block 3) to *empty* • It is recommended to set the **WebLogic Console Port Number** (menu block 3) to the *http listen port* of your administration server • It is recommended to set the **Web Server Port Number** (menu block 52) is the *http listen port* of the Oracle Utilities Application Framework servers or cluster.
2	The default security policy must be reset as it requires SSL so it is recommended to create a Feature Configuration within the product with the following recommended settings: • **Feature Name** set to `EMAILCONFIG` • **Feature Type** set to `External Messages` • **Description** set to `Email Configuration` (or equivalent) • **Option Type** set to `Default Security Policy` • **Sequence** set to `1` • **Value** set to `<none>`
3	Complete the steps outlined in *Web Services Configuration*.

GLOBAL FLUSH SUPPORT CONFIGURATION

The Global Flush feature allows any cache flush request (via the browser, JMX or batch API) to be propagated across all the caches across the architecture. This feature is not enabled by default and its use is optional. Use of this feature is recommended in production environments to ensure consistency of caching within that environment.

As with other parts of this document the instructions assume the domain is setup and available as per the previous sections:

Global Cache Flush Configuration Steps

STEP	PROCESS
1	Create a JMS Server to house the JMS resources using the Oracle WebLogic console using the *Services* → *Messaging* → *JMS Servers* option: • Create a new JMS Server using the **Name** `OUJMSServer` • Set the **Scope** to `Global` • Target the new JMS Server to the Oracle Utilities Application Framework Servers or cluster.

2	Create a JMS Module using the Oracle WebLogic console using the *Services → Messaging → JMS Modules* option: • Create a new JMS Module using the **Name** `OUFlushModule` • Target the new JMS Module to the Oracle Utilities Application Framework Servers or cluster.
3	Under the JMS Module created in the past step, create a JMS Connection Factory so that JMS connections can be established using the Oracle WebLogic console using the *Services → Messaging → JMS Modules* option using the *New* option under the *Summary of Resources*: • Create the Connection Factory using the *Connection Factory* resource type. • Specify the JMS Connection Factory **Name** as `OUFlushConnectionFactory` • Specify the **JNDI Name** as `jms/OUFlushConnectionFactory` • Ensure **XA Connection Factory enabled** for global communication support. • Target the JMS Connection factory to the appropriate JMS Servers • Verify the Connection Factory was correctly created including the subdeployment of *Default Targeting*.
4	Under the JMS Module created in step 2, create a JMS Request Topic, which is the JMS Topic used for communication, using the Oracle WebLogic console using the *Services → Messaging → JMS Modules* option using the *New* option under the *Summary of Resources*: • Create the Connection Factory using the *Distributed Topic* resource type. • Specify the JMS Topic **Name** as `OUFlushRequestTopic` • Specify the **JNDI Name** as `jms/OUFlushRequestTopic` • Targetting should be automatic to the appropriate servers. • Verify the Connection Factory was correctly created including the subdeployment of *Default Targeting*.
5	Under the JMS Module created in step 2, create a JMS Response Topic, which will hold the message responses from the architecture, using the Oracle WebLogic console using the *Services → Messaging → JMS Modules* option using the *New* option under the *Summary of Resources*: • Create the Connection Factory using the *Distributed Topic* resource type. • Specify the JMS Topic **Name** as `OUFlushResponseTopic` • Specify the **JNDI Name** as `jms/OUFlushResponseTopic` • Targetting should be automatic to the appropriate servers. Verify the Connection Factory was correctly created including the subdeployment of *Default Targeting*.
6	To enable global cache flush is performed in the batch architecture, use the `configureEnv` utility to set the **JMS Global Flush** for Batch (menu block 50) to `true`.
7	Restart/Start the managed servers/cluster and check each the Oracle WebLogic server logs for the term `Starting flush listener for.` Confirm there are no JMS related error messages in the log. Correct if there are errors.

8	Test the global flush using a browser and a session to the Oracle Utilities Application Framework product using the URLs:
	`https:// <server>:<port>/<context>/flushAll.jsp`
	`https://<server>:<port>/<context>/flushAll.jsp?showStatus`
	Where `<server>` is the product server, `<port>` is the port number allocated to the server and `<context>` is the configured context.
	A valid response should be similar to:

```
YYYY-MM-DD HH24:MI:SS.FF: WebservicesCacheFlusher done
YYYY-MM-DD HH24:MI:SS.FF: WebCacheFlusher done
YYYY-MM-DD HH24:MI:SS.FF: ServiceCacheFlusher done
```

FREQUENTLY ASKED QUESTIONS

Are any OUAF patches required to support the above configuration steps?

Prior to following the steps outlined in this document install the consolidated rollup released after June 2018 for your Oracle Utilities product.

I am unable to locate the setUserOverrides utilities in my installation. Where can I find them?

Make sure you have applied the below patches specific to your OUAF release.

4.2.0.3.0 – 28807803

4.3.0.1.0 – 28150494

4.3.0.2.0 – 28150499

4.3.0.3.0 – 28150507

4.3.0.4.0 – 28150521

4.3.0.5.0 – 28150529

Is the setUserOverrides sample suitable for use in a production environment?

The provided setUserOverrides are samples only. The values shown in the examples are intended as sample only. It is highly recommended that appropriate values be set for your implementation before using them at your site. The sample values are not recommended for Production use.

I am performing an initial installation of an Oracle Utilities product using Oracle Utilities Application Framework version prior to 4.3.0.6.0, why does the installation error with my 12.2.1 version of WebLogic?

Support for WebLogic 12.2.1.x was added post base release for many versions of Oracle Utilities Application Framework. If performing an initial installation start with a base supported version of prerequisite software, apply product patches as mentioned in the question above and then upgrade prerequisite software as needed.

For what versions of OUAF does this document apply?

This document is applicable to OUAF versions 4.2.0.3 and greater. Note that some configureEnv menu blocks, menu item descriptions and menu items themselves may differ from release to release. Please contact Oracle Support for any clarifications on the configureEnv steps.

What additional information should I gather prior to filing a SR with Oracle Utilities support for any issues encountered with the above?

Please run the below on the application installation host and include both the command and output in the body of your SR:

```
$ $WL_HOME/../oui/bin/viewInventory.sh|grep Distribution

$ WLS_DOMAIN_HOME=`perl $SPLEBASE/bin/getconfvalue.plx -k WLS_DOMAIN_HOME`
$ echo "Domain Home is: [$WLS_DOMAIN_HOME]"

$ grep domain-template-ref $WLS_DOMAIN_HOME/init-info/domain-info.xml|cut -f2
-d\=|awk 'NF{NF--};1'

$ grep extention-template-ref $WLS_DOMAIN_HOME/init-info/domain-info.xml|cut
-f2 -d\=|awk 'NF{NF--};1'
```

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